ABSTRACT OF THE DISCLOSURE

Anterior ischemic optic neuropathy ~~(AION)~~ is ~~one of a family of~~ an ischemic diseases affecting the optic nerve. A blockage of vessels supplying the intra-retinal portion of the optic nerve causes ~~results in~~ loss of axon transport stasis, retinal ganglion cell, ~~(RGC)~~ specific dysfunction, and RGC death. ~~AION~~ Research has been limited by the lack of ~~an appropriate, easily replicable, rapidly inducible,~~ low-cost models for this disease. ~~We have developed such a model. Animals were handled and utilized in accordance with ARVO guidelines.~~ Using a custom ~~designed fundus~~ contact lens, an intravenous injection of photosensitizing agent ~~was administered to~~anesthetizeds ~~100g~~ male Sprague-Dawley rats. A laser ~~was used to directly~~ activated dye within the small vessels perfusing the optic nerve. This treatment ~~was used to selectively~~ spared the larger ~~caliber~~ vessels perfusing the inner retina. Electrophysiologically, a decrease in amplitude of the visual evoked potential is noted. ~~Gross, histologic, molecular, and electrophysiological techniques are used to analyze changes induced by this method. The acutely treated rodent optic nerve grossly has the appearance of human AION, with pale edema. Electrophysiological, a decrease in amplitude of the visual evoked potential is noted.~~ Histologically, alterations in axonal transport are seen. Reverse-transcriptase based Polymerase chain

later retinal gene expression changes in ~~the~~ treated animals. This ~~new~~ method ~~accurately~~ replicates many cellular and molecular level changes in a low-cost animal model. ~~may greatly accelerate our understanding of the pathological long and short term processes involved in AION, and increase our ability to develop more effective treatments for this disease.~~